

Remarks

Cancellation and Amendment of Claims

In light of the Examiner's remarks and rejections, in addition to those claims cancelled earlier, the Applicants' Agent has herein cancelled claim 100.

The Applicants respectfully request the Examiner's review of the amended Claims.

In support of the Applicants' assertion that the Claims are now in condition for allowance, the Applicants offer the following remarks and responses to the Office Action mailed on October 3, 2007.

1. Rejection under 35 USC 112, second paragraph: Indefiniteness:

Claim 64 had been rejected as noted. The Applicant's Agent acknowledges the withdrawal of the rejection as to Claim 64.

2. Rejection under 35 USC 112, first paragraph: Written Description:

In response to the rejection of claims 64 and 99 – 100, under 35 USC 112, first paragraph, Written Description, the Agent for the Applicants has, herein, cancelled Claim 100 and amended Claims 64 and 99 in an effort to address the rejection remarks of the Examiner. As follows, the Agent for the Applicants respectfully submits that the claims are now in condition for allowance.

The Examiner notes that this rejection is being maintained for reasons of record in the 5/5/2006 office action and for the reasons in the current office action.

The Examiner's remarks on the bottom of page 3 through the top of page 6 are directly related to Claim 100 being drawn to an expression vector for use in bacterial cells selected from the group consisting of *E. coli*, *B. subtilis* and *R. eutrophus*. The Agent for the Applicants submit that the Examiner's remarks surrounding Claim 100 are rendered moot by the current cancellation thereof.

The Examiner next suggests that because the claims are not limited to proteins or polypeptides requiring enhancement of folding and solubility the claims are rendered unpatentable under the written description requirement because "the claimed vector encodes a very large genus of any sequence encoding a protein or polypeptide". The Agent for the Applicants respectfully suggests that to limit the claim to address only proteins or polypeptides requiring enhancement of folding and solubility would be irrelevant to the notion of "enhancement". It is well known that many proteins when expressed in *E. coli* may fold properly and be soluble when expressed under a given condition (e.g., a temperature lower than 37°C), but may require enhancement of folding and solubility when expressed under other conditions (e.g., 37°C). Thus, in such a circumstance, one could use the peptide extension vectors in either or both expression conditions where the peptide would play a prominent role in one (e.g., 37°C) and a minor, or no role, in the other condition (<37°C).

In addition, enhancing the solubility and folding of a protein or polypeptide of interest may or may not be solely applicable to a protein or polypeptide in need of such enhancement. It could be a more subtle "enhancement", for example, in a case in which a protein folds and is soluble but only when expressed at low levels whereas the peptides

of the invention could allow greater quantities to be expressed in a properly folded and soluble conditions. Therefore, the Agent submits that this requirement should be at best a “conditional” requirement and that the invention is not solely limited to use with proteins that absolutely require such enhancement. The Agent therefore submits that to require the use of the peptide extension expression vectors solely for proteins that wouldn’t ordinarily fold properly or be soluble is not relevant.

Furthermore, because the phrase “for enhancing the solubility and proper folding . . .” had been added into Claim 64 via an earlier amendment, the amendment herein has deleted the clause based on the remarks of the Examiner and the reasoning above. The amended Claim 64, being drawn to a pET-type vector for use in E. coli, having any one of the claimed peptide extensions for production of fusion proteins is fully disclosed in the written description. One of skill in the art would immediately recognize that other pET vectors could be used in place of pET15, the peptide extensions could be readily substituted one for the other as in the examples in the specification, and the protein or polypeptide of interest is commonly replaced in such expression vectors, depending upon one’s interest in a particular protein or polypeptide. Indeed, it would be a very strange world if all scientists studied the same recombinantly expressed protein or polypeptide!

In addition, to address the remarks on pages 6 to 7 the Agent respectfully submits that through the written description, which includes the examples of ClpX (for which T7B and other variants of T7B were fused to enhance its solubility and folding) and various yeast proteins (pages 36 – 37), those of skill in the art would know how to

replace the peptide extension T7B with the others claimed and how to replace the protein or polypeptide of interest in all vectors, including all pET-type vectors. Thus, the written description would be readily interpreted by one of ordinary skill to encompass pET-type expression vectors encoding any of the claimed peptide extensions and any protein or polypeptide of interest. They do not need to be instructed as to "how the structure of vector pET15 comprising CAR D1 T7B relates to the structure of the claimed expression vector". It is clear to those of skill, particularly as the presently amended claims are limited to pET-type expression vectors.

In addition, the Agent respectfully draws the Examiner's attention to the "Synopsis of Application of Written Description Guidelines" – "... the examiner has the initial burden, after a thorough reading and evaluation of the content of the application, of presenting evidence or reasons why a person skilled in the art would not recognize that the written description of the invention provides support for the claim. Clear evidence or reasons do not appear to be present in the Office Action.

Amended claims 64 and 99 are directed to pET-type vectors for expression in E. coli, of which the fully exemplified pET15 is a representative type. Many pET-type vectors are well known to those of skill in the art, while pET15 was prominently used in the Examples as a representative of the genus of pET-type vectors. Those of ordinary skill in the art who would read this specification would know that other pET vectors could be used interchangeably for pET15. As the Claims are solely directed to expression in E. coli the Agent for the Applicants respectfully requests review and

allowance of the claims with respect to being drawn to pET-type vectors for use in E. coli.

3. Rejection under 35 USC 112, first paragraph: Enablement.

The Agent for the Applicants acknowledges the withdrawal of the rejection of Claim 64 with respect to enablement.

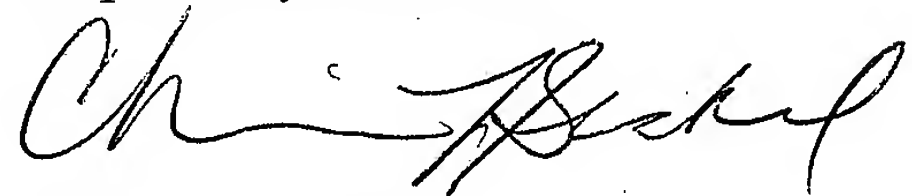
Thus, the Applicants respectfully submit that the Claims presented herein are supported in full by the written description and therefore request reconsideration and withdrawal of the rejection.

Summary

Claims remaining under consideration include currently amended Claims 64 and 99. The amendments contain no new matter.

In light of the above Amendments and Remarks, applicants respectfully submit that the instant application is now in condition for allowance and solicit a timely notice of allowance.

Respectfully submitted,



Christine L. Brakel
Agent for Applicants
Registration No. 45,772

Date: November 27, 2007

Christine L. Brakel
Patent Agent
Brookhaven National Laboratory
Bldg. 185
P.O. Box 5000
Upton, New York 11973-5000
(631) 344-7134